

## CLAIMS

Therefore, having thus described the invention, at least the following is claimed:

1. A method for synthesizing filters, comprising:  
providing a first microelectromechanical system (MEMS) resonator and a second MEMS resonator adjacent to the first MEMS resonator; and  
electrically coupling the first MEMS resonator and the second MEMS resonator.
2. The method of claim 1, further including electrically coupling additional resonators.
3. The method of claim 1, wherein electrically coupling includes providing a shunt capacitor to ground in between the first MEMS resonator and the second MEMS resonator.
4. The method of claim 1, wherein electrically coupling includes effecting a series capacitance between the resonating body of the first MEMS resonator and that of the second MEMS resonator.
5. The method of claim 1, wherein electrically coupling includes providing an active component between the first MEMS resonator and the second MEMS resonator.
6. The method of claim 5, wherein the active component includes an amplifier.
7. The method of claim 5, further including applying a polarization voltage to effect a resonance frequency at the first MEMS resonator that is substantially equal to the second MEMS resonator frequency; and cascading the first MEMS resonator with the second MEMS resonator such that Q-amplification is effected.

8. A microelectromechanical system (MEMS) filter system, comprising:
  - a first MEMS resonator; and
  - a second MEMS resonator electrically coupled to the first MEMS resonator.
9. The system of claim 8, further including additional MEMS resonators electrically coupled to each other.
10. The system of claim 8, wherein the first MEMS resonator and the second MEMS resonator are electrically coupled with a shunt capacitor to ground disposed between the first MEMS resonator and the second MEMS resonator.
11. The system of claim 8, wherein the first MEMS resonator and the second MEMS resonator are electrically coupled using a series capacitance disposed between the resonating body of the first MEMS resonator and that of the second MEMS resonator.
12. The system of claim 8, wherein the first MEMS resonator and the second MEMS resonator are electrically coupled using an active component disposed between the first MEMS resonator and the second MEMS resonator.
13. The system of claim 12, wherein the active component includes an amplifier.
14. A communications device, comprising:
  - a receiver; and
  - a microelectromechanical system (MEMS) filter system disposed in the receiver,
    - the MEMS filter system comprising:
      - a first MEMS resonator; and
      - a second MEMS resonator electrically coupled to the first MEMS resonator.
15. The communications device of claim 14, further comprising a transmitter.

16. The communications device of claim 15, wherein the transmitter comprises a second MEMS filter system, the second MEMS filter system comprising:
- a third MEMS resonator; and
  - a fourth MEMS resonator electrically coupled to the third MEMS resonator.